

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Atty. Ref.: **4662-218**

JANSSEN

Conf. No.: **4733**

Serial No. **10/587,267**

Group: **1796**

Filed: **July 26, 2006**

Examiner: **Szekely**

For: **HALOGEN-FREE FLAME-RETARDED POLYESTER COMPOSITION**

* * * * *

September 8, 2009 (Tuesday)
(Monday = Labor Day Holiday)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPLICANTS' BRIEF ON APPEAL

Sir:

This Appeal is from the Official Action dated April 6, 2009, finally rejecting claims 1-13 presently pending herein.¹ As will become evident from the following discussion, the Examiner's rejections are in error and, as such, reversal of the same is solicited.

¹ The claims pending in this application and on appeal herein appear in the Section VIII Claims Appendix accompanying this Brief.

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I. Real Party In Interest

The real party in interest is the owner of the subject application, namely DSM IP Assets B.V.

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II. Related Appeals and Interferences

No appeals and/or interferences related to this application are pending.

III. Status of Claims

- A. The following claims are presently pending in this application: Claims 1-13.
- B. The following claims are the claims on appeal and have been rejected in the Examiner's "final" Official Action of June 3, 2009: Claims 1-13.
- C. The following claims have been cancelled during prosecution to date:
None.
- D. The following claims have been allowed: None
- E. The following claims have been withdrawn: None
- F. The following claims have been objected to: None

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IV. Status of Amendments

No amendments subsequent to the April 6, 2009 “final” Official Action have been filed.

V. Summary of Claimed Subject Matter²

The invention as defined by independent claim 1 is directed to halogen free flame-retarded thermoplastic polyester moulding composition which consists of: (page 4, lines 18-19)

- (A) a polymer composition consisting of a (page 4, line 20)
 - a) 30-67 mass % of at least one thermoplastic polyester polymer, and (page 4, line 21)
 - b) 0-15 mass % other polymers, of which other polymers 0-0.5 mass % is a fluorine polymer, (page 4, lines 22-23 and page 8, lines 25-27)
- (B) a flame retardant system consisting of (page 4, line 24)
 - a) 33-55 mass % melamine cyanurate, (page 4, line 25)
 - b) 0 to less than 2 mass % of a phosphorous containing flame retardant not comprising elementary phosphorous, and (page 4, line 26-27)
 - c) 0-5 mass % of an inorganic flame retardant synergist not comprising phosphorous, and (page 4, lines 28-29)
- (C) 0-10 mass % other additives, of which other additives 0-5 mass % are fibrous reinforcing agents, (page 4, lines 30-31) and wherein the sum of components (A) - (C) totals 100 mass % and all the mass percentages are relative to the total mass of the composition. (page 4, lines 32-33).

The invention as defined by independent claim 13 is directed to a halogen free flame-retarded thermoplastic polyester moulding composition which consists of: (page 4, lines 18-19)

² The numbers in parenthesis refer to page and line numbers of the originally filed specification.

- (A) 30-67 mass % of at least one thermoplastic polyester polymer, (page 4, line 21)
- (B) 33-55 mass % melamine cyanurate, (page 4, line 25) and optionally
- (C) 0-10 mass % of at least one additive selected from the group consisting of mould-release agents, lubricants, nucleating agents and flow-promoters, (page 11, lines 5-6 and line 35) wherein

the sum of components (A) - (C) totals 100 mass % and all the mass percentages are relative to the total mass of the composition. (page 11, line 36 bridging page 12, line 1).

VI. Grounds of Rejection to be Reviewed on Appeal

The following rejection to be reviewed on appeal was advanced in the final Official Action dated March 3, 2009:

Claims 1-13 are rejected under 35 USC §103(a) as allegedly being unpatentable over either Mogami et al (USP 5,684,071), Yamamoto et al (USP 5,770,644), Tanaka et al (JP 2003-076088), Yoshihara et al (JP 11-080519) or Saiki et al (JP 09-143346).

VII. Arguments

1. Claims 1-13 are patentably unobvious under 35 USC §103(a) based on the applied publications of record

A. The Claimed Invention

Applicants note that pending claim 1 is directed to a *specifically defined* composition, consisting of *specific* components only, defined in *specific* quantities. In direct contrast, the compositions described in the applied publications are defined broadly and not specific in all their components. Furthermore, the examples provided in the applied publications deviate from composition as defined in pending claim 1

The present invention as defined by pending claim 1 is directed to a flame retardant polymer composition ***consisting of:***

- (A) 30-67 mass % of at least one thermoplastic polyester, and.....
- (B) a flame retardant system consisting of:
 - a) 33-55 mass % of melamine cyanurate
 - b) 0 to less than 2 wt.% of a phosphorous containing flame retardant.....
-
- (C) 0-10 mass % of other additives, of which 0—5 mass % may be fibrous reinforcing agents.

The polymer composition according to the claimed invention therefore contains a very high amount of melamine cyanurate and a very low or no amount of a phosphorous containing compound. It also contains a very low or no amount of fibres. Because of the low or no content of a phosphorous-containing compound, very good results are obtained with respect to thermal and hydrolysis resistance. (See for example the specification at page 3, line 35 bridging page 4, line 2.)

B. The Claimed Invention is Statutorily Unobvious

(i). Patentability over Yamamoto

Yamamoto is directed to a fire retardant polymer composition comprising

- (A) 95-30 pbw polyester
- (B) 5-70 ppw PPE or PPS

and for the total of (A) and (B),

- (D) 2.0-45 pbw of a phosphor containing compound
- (E) 0-150 ppw of glass fibers
- (G) 0-45 pbw melamine cyanurate.

Many other optional components are also disclosed.

Yamamoto does not teach the *specific* combination of a high melamine cyanurate content and very low or no phosphorous compound content as is required by the claims of the present application.

Moreover, Yamamoto discloses that at least 2 pbw of the phosphorous compound must be present, and it may be present up to 45 pbw. In addition, the presence of melamine cyanurate is not mandatory in Yamamoto's compositions, but instead is optional.

In all examples of Yamamoto a considerable amount of the phosphorous compound is used. In the majority of the thirty examples, 15 ppw of the phosphorous compound is used, while in some examples even amounts up to 30 ppw is used. Only in example 14 is 7.5 ppw phosphorous compound is used.

Also Yamamoto discloses that, when present, a relatively *low* amount of melamine cyanurate is used. Specifically, in the examples, melamine cyanurate is used

in amounts of 15 ppw or less. In general however the examples of Yamamoto employ an equal amount of phosphorous compounds and melamine cyanurate.

In addition to the relatively high amount of phosphorous compound and relatively low amount of melamine cyanurate, Yamamoto discloses in the Examples that a considerable amount of glass fibres is used. For example, in 28 of the 30 examples there is used 60 ppw chopped or milled glass fibres. In one example (Ex. 9) 20 ppw is used. Only in example 8 are no glass fibres used.

As discussed above, the examples of Yamamoto suggest that the amount of melamine cyanurate is much lower, and the amount of the phosphorous compound is much higher as compared to pending claim 1.

Therefore applicants suggest that claim 1 of the present patent application is novel in view Yamamoto.

Claim 1 is also suggested to be patentably unobvious over Yamamoto. In this regard, Yamamoto is specifically directed to the use of phosphorous ester as explained above. Yamamoto further teaches the use of melamine cyanurate together with the phosphorous ester, however at a moderate level.

In the present invention as defined by claim 1, however, the use of phosphorous compounds is limited or absent entirely. On the other hand, a high level of melamine cyanurate is used. Surprisingly a good level of flame resistance is obtained, while thermal and hydrolysis resistance is maintained.

(ii). Patentability over Mogami

The Examiner refers to claim 9 of Mogami which is directed toward a composition comprising:

(A) thermoplastic polyester,

- (B) 2-50 wt.% of heterocyclic compound (melamine cyanurate respectively melamine phosphate according to claim 9),
- (C) 0.1-50 wt.% of compound (B) having at least two functional groups
- (D) 0-50 wt. % of phosphorous based flame retarder.

In the examples of Mogami, melamine cyanurate which is modified with functional groups is used in quantities up to 20 wt.%. Also 30% of a glass fiber was added in the examples (see column 13. lines 64-65).

In the specification of Mogami, there is no disclosure of the amount of thermoplastic polyester. There is certainly no disclosure in Mogami of the *specific* range of thermoplastic polyester as defined by claim 1 of the present application. There is also no disclosure of the *specific* range of melamine cyanurate of claim 1 of the present application.

Furthermore there is no disclosure of the *specific* amount of glass fibers as may be required by pending claim 1.

In the examples of Mogami, only modified melamine cyanurate is employed. Thus, no unmodified melamine cyanurate per se is used. Also the amount of glass fibers used in the examples exceeds the range of the fibers, if present, in pending claim 1.

In Mogami there is no specific teaching of a low or no amount of a phosphorous compound. There is also no specific teaching of the use of high amount of melamine cyanurate. On the contrary the melamine cyanurate-based compound and melamine-phosphate based compound contemplated by Mogami are disclosed as being equivalent to one another. Therefore there is no teaching in Mogami to obtain the desirable effects of the present invention as explained above.

(iii). Patentability over Tanaka et al Yoshihara et al and Saiki et al

The applied Japanese publications to Tanaka et al, Yoshihara et al and Saiki et al are even further removed from the present invention. In this regard, applicants respectfully question the relevancy of Tanaka, Yoshihara and Saiki. More specifically, the composition of the present invention is quite specific with respect to its content of the thermoplastic polyester, the melamine cyanurate, and also with respect to the limited amount of further additives. No such specific composition is disclosed in any of the applied Japanese patent publications,

It will be observed in this regard that Tanaka does not disclose at all the amount of thermoplastic polyester. Also the amount of further additives is not disclosed. In fact additional additives are necessary to lower the volume resistivity.

In Yoshihara, the specific amounts of additives, fillers, glass fibers and the like are left open. Also the composition contains undefined amounts of further polymers.

In Saiki (JP-09-1 43346) no specific amounts of all constituents are mentioned.

Therefore, individually and/or collectively, none of the applied Japanese publications anticipates or renders obvious the presently claimed invention.

C. Conclusions

The Examiner has observed that:

“The examiner admittedly is picking and choosing [among elements of the applied publications], but it may be entirely proper [to pick and choose] in the context of an obviousness rejection.” (Official Action dated April 6, 2009 at page 3, lines 6-7).

On this latter point, it is noted that what is required by an analysis under 35 USC §103(a) is more than merely “cherry picking” words or phrases from one prior art reference and combining it with another. As the Supreme Court observed in *KSR International Co. v. Teleflex Inc.*:³

“...a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.”

(emphasis added)

When the applied prior art of record is analyzed properly according to the standards of *Graham v. John Deer Co.*⁴ it must be concluded that the presently claimed invention is patentably *unobvious*. Hence, reversal of the Examiner’s rejection of all pending claims under 35 USC §103(a) as allegedly obvious based on the reference publications of record is in order.

³ 550 U.S. 398, 82 USPQ2d 1385, 1396 (2007)

⁴ 383 U.S. 1, 148 USPQ 459 (1966).

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For the reasons advanced, the Examiner's rejection of the pending claims herein under 35 USC §103(a) is in error and must be reversed. Such favorable action is solicited.

Respectfully submitted,

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VIII. CLAIMS APPENDIX

1. (previously presented) Halogen free flame-retarded thermoplastic polyester moulding composition which consists of:
 - (A) a polymer composition consisting of a
 - a) 30-67 mass % of at least one thermoplastic polyester polymer, and
 - b) 0-15 mass % other polymers, of which other polymers 0-0.5 mass % is a fluorine polymer,
 - (B) a flame retardant system consisting of
 - a) 33-55 mass % melamine cyanurate,
 - b) 0 to less than 2 mass % of a phosphorous containing flame retardant not comprising elementary phosphorous, and
 - c) 0-5 mass % of an inorganic flame retardant synergist not comprising phosphorous, and
 - (C) 0-10 mass % other additives, of which other additives 0-5 mass % are fibrous reinforcing agents, and whereinthe sum of components (A) - (C) totals 100 mass % and all the mass percentages are relative to the total mass of the composition.
2. (original) Composition according to claim 1, wherein the thermoplastic polyester is a poly(alkylene terephthalate).
3. (previously presented) Composition according to claim 1, wherein the polymer composition consists of poly(butylene terephthalate) or poly(ethylene terephthalate), or a mixture or copolymer thereof, preferably is poly(butylene terephthalate).
4. (previously presented) Composition according to claim 1, wherein the composition is substantially free of fluorine polymers.

5. (previously presented) Composition according to claim 1, wherein the other polymer (A-b) is a rubbery impact modifier.
6. (previously presented) Composition according to claim 1, wherein the composition comprises 37-45 mass % melamine cyanurate, relative to the total mass of the composition.
7. (previously presented) Composition according to claim 1, wherein the flame retardant system contains less than 1 mass %, relative to the total of the sum of components (A) - (C), of the phosphorous containing flame retardant (B-b).
8. (previously presented) Composition according to claim 1, wherein melamine cyanurate is the sole flame retardant additive.
9. (previously presented) Composition according to claim 1, wherein the composition is free of fibrous reinforcing agents.
10. (previously presented) Composition according to claim 1, wherein the composition has a P-content of below 0.25 mass % relative to the total mass of the moulding composition.
11. (previously presented) Composition according to claim 1, wherein the composition consists of:
 - (A) a polymer composition consisting of
 - a) 30-65 mass % of at least one thermoplastic polyester polymer and
 - b) 0-15 mass % other polymers, not containing a halogen containing polymer,
 - (B) a flame retardant system consisting of
 - a) 35-50 mass % melamine cyanurate, and
 - b) 0-3 mass % of an inorganic flame retardant synergist not comprising phosphorous, and

- (C) 0-10 mass % other additives, not comprising fibrous reinforcing agents, and wherein the sum of components (A) - (C) totals 100 mass % and all the mass percentages are relative to the total mass of the composition.
12. (previously presented) Moulded part for use in electrical or electronic applications, comprising the polyester composition according to claim 1.
13. (previously presented) A halogen free flame-retarded thermoplastic polyester moulding composition which consists of:
- (A) 30-67 mass % of at least one thermoplastic polyester polymer,
 - (B) 33-55 mass % melamine cyanurate, and optionally
 - (C) 0-10 mass % of at least one additive selected from the group consisting of mould-release agents, lubricants, nucleating agents and flow-promoters, wherein
- the sum of components (A) - (C) totals 100 mass % and all the mass percentages are relative to the total mass of the composition.

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IX. EVIDENCE APPENDIX

[NOT APPLICABLE]

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X. RELATED PROCEEDINGS APPENDIX

[NOT APPLICABLE]

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XI. CERTIFICATE OF SERVICE

[NOT APPLICABLE]